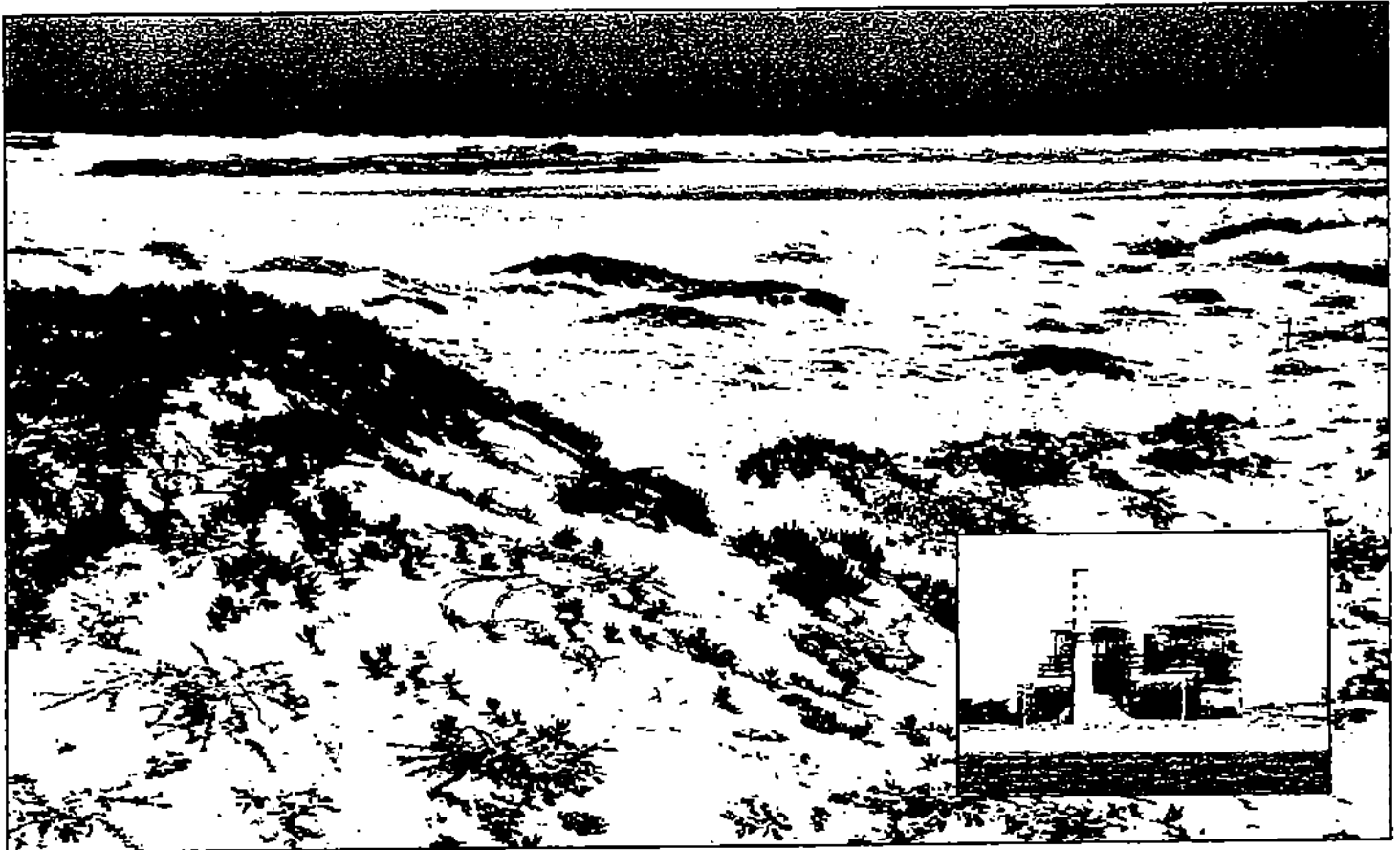


**PRE-ABANDONMENT HABITAT VALUES
IN THE VICINITY OF THE
MANDALAY MARINE TERMINAL PIPELINE**

May 2000



Prepared for:



**Southern California Edison Company
Rosemead, California**

Prepared by:



**MBC Applied Environmental Sciences
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PROJECT STAFF

MBC Applied Environmental Sciences

M. D. Curtis - Project Manager

Marine Scientists

**D. S. Beck
M. D. Curtis
E. E. Damboise
A. D. Halpern
S. M. Klick
R. H. Moore
A. K. Morris
C. L. Paquette
M. L. Ptacnik
B. L. Smith
D. G. Vilas**

Project Coordinator

M. R. Pavlick

PRE-ABANDONMENT HABITAT VALUES IN THE VICINITY OF THE MANDALAY MARINE TERMINAL PIPELINE

INTRODUCTION

Southern California Edison Company (SCE) is seeking to determine if it should abandon or remove its oil pipeline from offshore of Reliant Energy's Mandalay Generating Station to the onshore connection inside of the power plant. As the proposed removal of the pipeline may involve the excavation of the pipeline from approximately 1000 ft of dune and beach habitat through the intertidal zone and out to an undetermined cutoff point, there are expected to be some minor impacts to the existing habitats. SCE has conducted a pre-abandonment biological survey to determine the habitat values of the site prior to the abandonment process.

PRE-ABANDONMENT CHARACTERIZATION

Objectives of the pre-abandonment survey

The habitats that exist or potentially exist along the pipeline were reviewed and survey plans were prepared with sufficient detail to characterize each of the habitats in the event that any are impacted by the abandonment process.

The following surveys were conducted to determine the exact scope of the post-abandonment surveys and the monitoring program necessary to determine whether the area has recovered.

Dune Survey - The dunes were mapped to show contours and biota identified and enumerated in order to insure habitat values are documented.

Avifauna Survey - All birds utilizing the beach area for forage, feeding, nesting, or roosting were observed and identified.

Intertidal Survey - Intertidal fauna in the sediment were determined. In addition surveys were conducted to determine whether the small silverside fish grunion were utilizing the beach area in the vicinity of the pipeline to lay eggs.

Subtidal Survey - The subtidal survey documented bottom habitat at selected sites along the pipeline corridor and at the anchor mooring sites to the offshore connection.

DESCRIPTION OF THE STUDY AREA

Physiography

The Mandalay Generating Station and the proposed pipeline abandonment site is located on the California coast, approximately 4.8 km west of the City of Oxnard in Ventura County.

The general orientation of the coastline between Point Conception and the Mexican border is from northwest to southeast. The continental margin has been slowly emerging for a long time, resulting in a predominantly cliffed coastline, broken by coastal plains in the Oxnard-Ventura, Los Angeles, and San Diego areas.

The Mandalay Generating Station is situated on the coastal plain of the Ventura Basin, approximately 30 km northwest of Point Mugu and 3 km south of the mouth of the Santa Clara River (Figure 1). The Ventura Basin is defined by the Ventura River delta to the north and the barrier beaches at Point Mugu to the south. Prominent natural features of this stretch of coast include straight sandy beaches, the dunes along Mandalay Beach, and the marshes and lagoon in the naval reservation near Point Mugu.

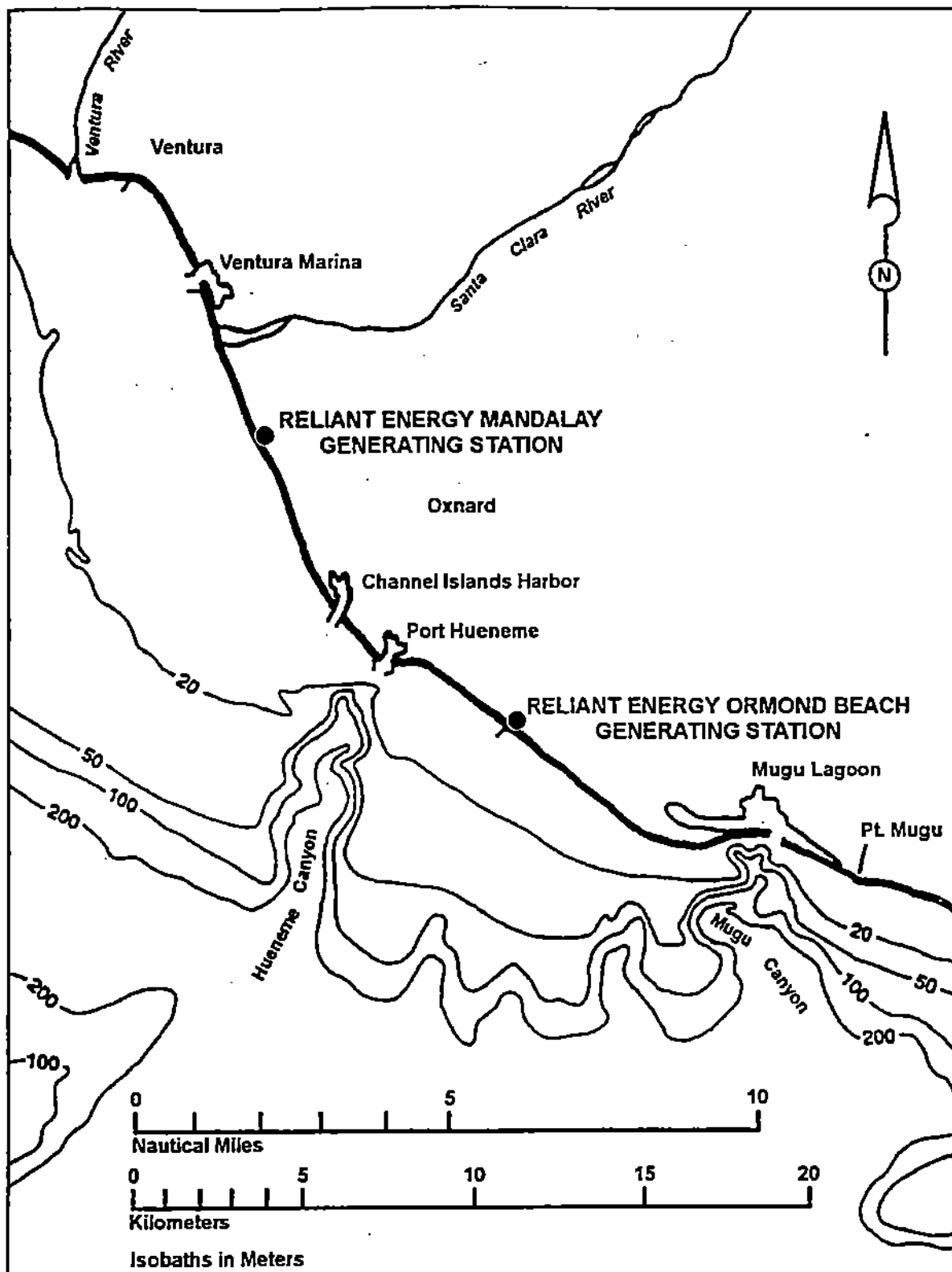


Figure 1. Location of the study area.

Submarine Physiography

The submarine physiography of the Ventura Basin is characterized by two distinct areas divided by the Hueneme Canyon (IRC 1973). To the northwest of the Hueneme Canyon is a broad gently sloping sea floor and to the southeast a narrower, steeper slope. Mugu Canyon cuts into the slope near the southeastern boundary of the basin.

Offshore at Mandalay Beach, the 20-fathom (fm) contour is 12.8 to 16.0 km from shore. Marked changes in bottom topography close to shore can result in irregular current patterns and variable current velocities that can greatly affect turbidity in the area. Based on sediment samples collected in more than 12 surveys since 1978, most of the nearshore bottom in five to nine meters depth is composed of sediments that have averaged phi 2.77 (fine sand) over the ensuing 22 years (MBC 1999). Sediment in the intertidal zone from approximately 0 ft to -5 ft MLLW is gravel and beyond that to at least -9 m it is fine sand (CTM pers com.). Beyond the -30 ft contour line (9m), sediments become progressively finer out to -45 ft MLLW (MBC 1978).

Environmental Setting

Dune Habitat. The beach in front of the station is composed of a narrow row of tall dunes, sloping down gradually is a wide flat beach that gives way to a wide intertidal beach. The vegetation is dependent on the beach topography, with beach grass, silver beachweed, and sea fig on the dunes, and scattered sea rocket and beach morning glory on the beach sloping up to the dunes (Figure 2). There is no vegetation on the lower part of the beach between the beginning of the slope and the berm. The beach is used by the public for surf fishing, sunbathing, jogging, bird watching, etc., but this is limited, as beach access and the nearest public parking are about one-half mile southeast of the station.

Avifauna Habitat. Birds seen in the vicinity of Mandalay generating station are those species common to most of the sandy beaches of southern California. These species are not rigidly restricted any particular zone, but move up and down the beach in search of forage. They include sanderlings, godwits, whimbrels, curlews, willets, and plovers. Several species of gulls, cormorants, grebes, scoters, loons, terns and brown pelicans feed in the waters nearshore. Occurrences of some species are seasonal; some species are winter visitors, while others are spring and fall migrants. Only a few species nest in southern California.

Intertidal Habitat. The intertidal zone is generally considered to be the area from the high tide mark to 7 ft below the high tide mark. This is a difficult environment to adapt to as it is a zone of high wave impact. Relatively few species of invertebrates inhabit the sandy intertidal habitat and most are very small and easily overlooked. However, there are three species that may be of concern either because they are taken by commercial or sport fishermen or are an important prey source for local fish species.

Beach surveys by California Department of Fish and Game (CDF&G) in 1990 found that Pismo clams (*Tivela stultorum*), bean clams (*Donax gouldi*) and sand crabs (*Emerita analoga*) occur on Mandalay Beach (Togstad and Haaker 1990). Sand crabs were also found by MBC biologists during a cursory survey of the beach on 16 August 1990.

Pismo clams live near the surface (8 to 12 inches deep), but are not rapid burrowers. Pismos have cyclical population densities; major storms, such as those of the winter of 1982-83, and again in 1988, may cause dramatic population declines. There may also be several years of poor recruitment so that the clam population takes many years to return to its former level. Pismos grow slowly, approximately 20 mm per year during their first three to four years (Coe 1947) and take several years to reach the legal size of 4 inches.

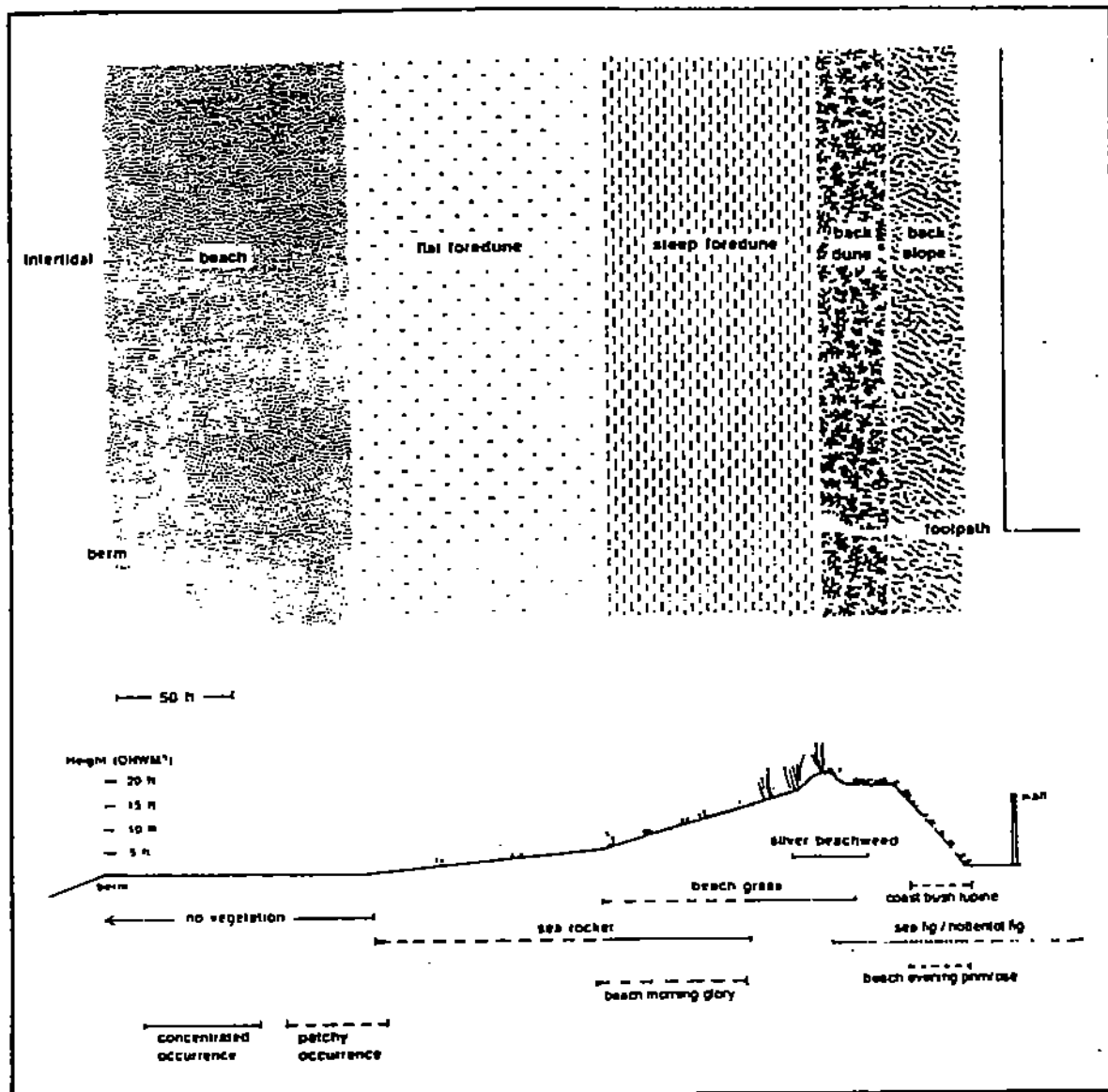


Figure 2. Vegetation zone map and features of the dunes and beach in front of the Mandalay Generating Station, and beach profile of the dunes and beach seaward of the facility.

Subtidal Habitat. The subtidal area off of Mandalay generating station has been studied previously and there are no hard bottom habitats known in the vicinity which limits the type of resources available.

Commercial and sport fishing are limited in the Mandalay Beach vicinity due to the type of offshore habitat. Commercial fishing for California halibut (*Paralichthys californicus*) is conducted greater than one nautical mile offshore, for Dover sole (*Microstomus pacificus*) in at least 1800 ft (548 m) of water, for rockfish (*Sebastes* spp.) in greater than 180 ft (55 m) of water, and miscellaneous marketfish (including English and Rex sole, *Parophrys vetulus* and *Glyptocephalus zachirus*, respectively) in at least 600 ft (183 m) of water. Fishing for commercial invertebrates includes ridgeback shrimp (*Sicyonia ingentis*) and spot prawns (*Pandalus platyceros*) in greater than 180 ft (55 m) of water, crabs (*Cancer* spp.) in 60 to 240 ft (18 to 73 m) of water. There is no commercial fishery for Pismo or bean clams in the area (David O. Parker, CDF&G, pers. comm.).

Nearshore sport fishing in the area is limited to kelp beds near the mouth of Channel Islands Harbor (Dave Parker, CDF&G, pers. comm.) and surf fishing from sand beaches. Fish species taken by surf anglers at Mandalay Beach include silver surfperch (*Hyperprosopon ellipticum*), barred surfperch (*Amphistichus argenteus*), yellowfin croaker (*Umbrina roncadore*), and California corbina (*Menticirrhus undulatus*). California grunion (*Leuresthes tenuis*) may be taken (by hand only) on sandy beaches between June and March (grunion spawning or "runs" occur from March through September). (CDF&G et al. 1998). Barred surfperch, yellowfin croaker and California corbina feed largely on sand crabs (*Emerita analoga*) and bean clams (*Donax gouldi*) occurring in the intertidal zone (Fitch and Lavenberg 1971). Sand crabs are often used by surf fishermen as bait. There is probably very little clamming for Pismo clams at Mandalay Beach, as CDF&G did not find any Pismos of legal size in a survey conducted in 1990 (Togstad and Haaker 1990).

MATERIALS AND METHODS

STATION LOCATIONS

The pre-abandonment survey program was conducted by MBC Applied Environmental Sciences (MBC). The sand dunes were sampled at three locations on four days, avifauna sampling was conducted on three days at three locations; intertidal sampling was conducted at three locations on one day, and subtidal sampling was conducted at 17 offshore stations along the pipeline corridor.

Navigation and Station Siting

Stations were located by satellite navigation using Differential Global Positioning System (DGPS). Two units, a Magellan Meridian XL with a DCI differential interface and a Garmin 12 were utilized and cross checked for potential errors. The Magellan is accurate to 1m when utilized in conjunction with the DCI differential unit. Positions were recorded in the field, stored in memory, and cross checked by downloading positions at the laboratory.

Dune Survey Methods

Three permanent transects were established through the dune zone (perpendicular to the water's edge): one transect at the pipeline removal site and, as controls, one each upcoast and downcoast at a distance of 100 m from the removal site. Transect lengths varied to adequately characterize the entire width of the vegetated dunes at each site. Meter tapes marked at 1 decimeter (dm) intervals were used to delineate each transect. Plants and animals were identified and quantified each dm along a transect. Photographs were taken to characterize each transect and to document representative plants. Samples of all plant species were collected, pressed, and mounted on herbarium paper, and included in MBC's museum collection. Percent cover was determined by dividing the number of 1-dm sections covered by each species by the total number of sections along each transect. Following transect surveys, seeds were collected from some native dune plants for replanting once pipeline removal activities are complete.

Avifauna Survey Methods

Two observers noted the birds and their behavior on the portion of Mandalay beach spanning the area that would be affected by the proposed pipeline abandonment as well as upcoast and downcoast of this site. The avifauna surveys were conducted in the mornings to minimize disturbance of the birds. Birds observed during other stages of the survey were also noted.

Intertidal Survey Methods

Macroinvertebrate infaunal populations were sampled at three separate locations near the Reliant Energy Mandalay Generating Station: at the pipeline location, 100 m upcoast from the pipeline (upcoast

control), and 100 m downcoast from the pipeline (downcoast control) (Figure 3). At each location, transects parallel to shore were established at the -1 ft MLLW, +1 ft MLLW, +3 ft MLLW, and +5 ft MLLW

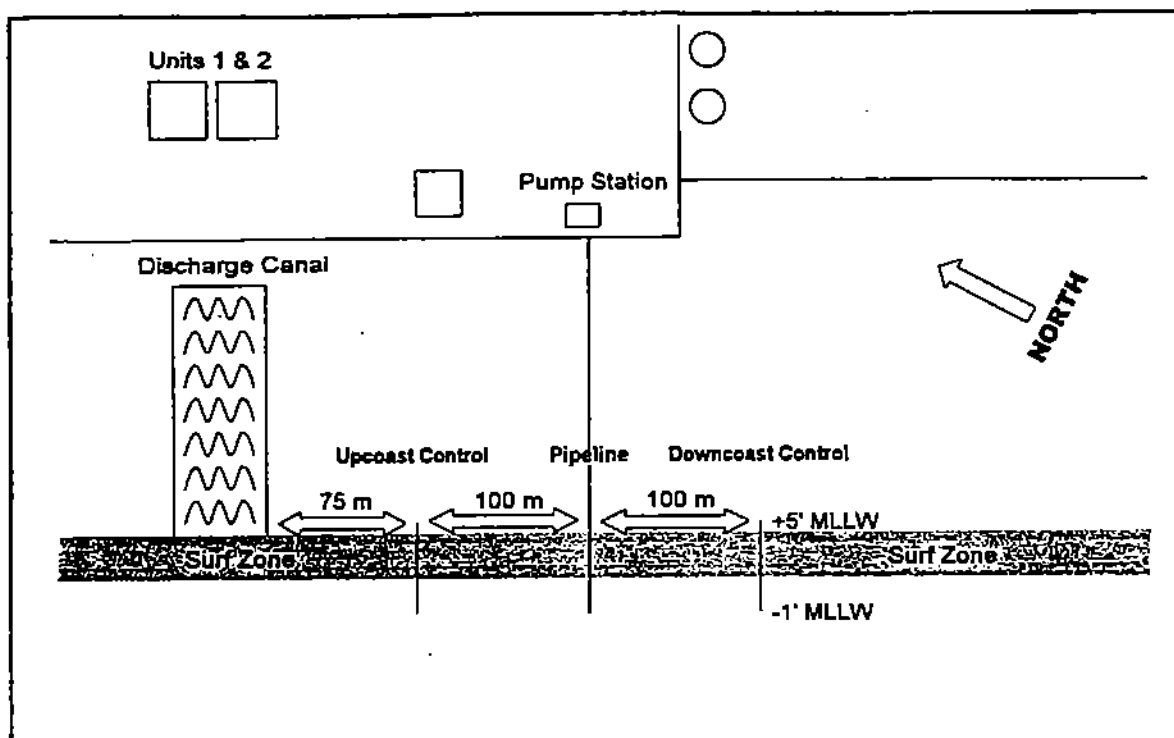


Figure 3. Intertidal survey sampling locations.

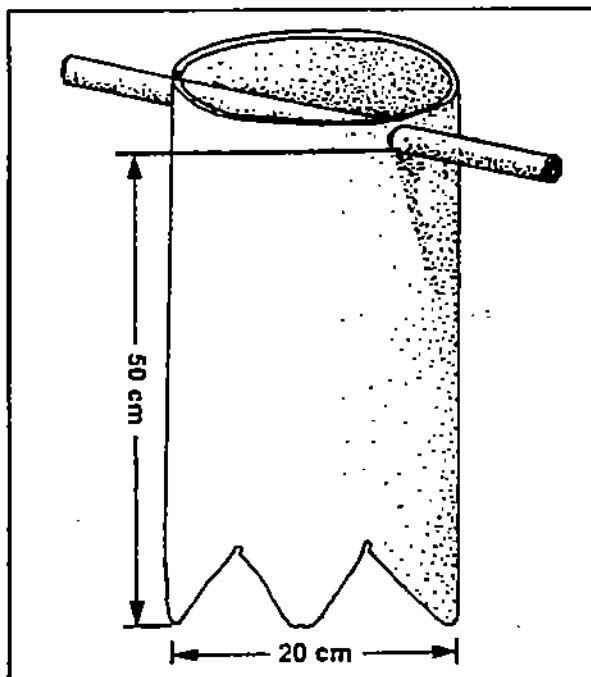


Figure 4. Schematic of intertidal corer used for intertidal macrofauna collections.

elevations (biologists were unable to establish a -1 ft MLLW transect at the downcoast control site). Tidal elevations were determined using a surveyor's transit and stadia rod, measuring from a control point of known elevation. Distances were determined using a laser rangefinder. At each tidal elevation, five replicate cores spaced 5-m apart were extracted using 20-cm diameter by 50-cm depth intertidal corers (Figure 4). All sediment extracted was sieved through 6mm (1/4") diameter screens. Animals retained on the screens were identified and measured in the field. Small specimens were preserved and returned to the laboratory for confirmation. Data from the collections was expressed as the number of individuals collected per depth level and per one square meter.

Five shallow (<6" deep) trenches were excavated between tidal level transects and extracted sediments were inspected for California grunion (*Leuresthes tenuis*) eggs. Fifteen trenches were dug at the downcoast control site and the pipeline site, and ten trenches were dug at the upcoast control site.

Subtidal Survey Methods

Surveys of the baseline biological conditions in the study area were conducted during the pre-abandonment survey. Utilizing the recently completed sidescan sonar data of the entire pipeline and surrounding survey area, 17 dives were made to determine whether there were any critical habitats in the study area (Table 1). No kelps, eelgrass or hard substrate (suggesting reefs) were noted in the side-scan data suggesting that only soft-bottom habitat was found in the area of the pipe and within any potential anchor corridors, therefore, the subtidal biological survey was focused only on the pipeline corridor and potential anchor corridors.

Table 1. Latitude/longitude coordinates and depth of water (MLLW) of dive survey points along offshore pipeline, 24 and 25 April 2000.

Location	Latitude	Longitude	Depth (MLLW)
Pipe terminus	34°12.000'	119°15.930'	44.3
0.05'	-	-	42.2
0.10	-	-	41.2
0.15	-	-	39.2
0.20	-	-	38.2
0.25	-	-	36.9
0.30	-	-	34.9
0.35	-	-	33
0.40	-	-	30
0.45	-	-	27.1
Anchor 1	34°11.833'	119°16.017'	48.1
Anchor 2	34°11.850'	119°15.917'	45.7
Anchor 3	34°11.900'	119°15.767'	43.6
Anchor 4	34°12.000'	119°15.717'	40.5
Anchor 5	34°12.100'	119°15.767'	42.4
Anchor 6	34°12.167'	119°15.933'	43.3
Anchor 7	34°12.167'	119°16.017'	44.2

* Distances are in nautical miles from Pipe Terminus.

Biologist-divers ground-truthed selected stations along the entire pipeline corridor and noted the substrate type and any marine plants or animals found in the vicinity of any of the stations along the corridor. As visibility was near zero, the search was conducted by feel. Using this method, substrate type and large faunal or algal species are easily distinguishable. The location of each area along the pipeline was determined by recording the latitude and longitude of the offshore connection from the chart and dropping a buoy on that location using DPGS. We then recorded the DPGS coordinates of the onshore connection and sighted a straight line between the two connections. Buoys were dropped every 0.05 nautical miles apart or approximately 90 m from the offshore connection to the inshore area. These areas were then plotted on NOAA navigational charts utilizing DGPS. During the ground-truth survey, the biologist-divers searched a circle with a diameter of 10-m (approximately 80 m²) at each station along the pipeline from the shallow subtidal area (-25 ft MLLW) to the end of the pipe in -44.3 ft MLLW.

RESULTS

Field Operations

The pre-abandonment surveys of the habitats at Mandalay Generating Station were conducted on 22 February, 14 April, and 24-25 April 2000.

Dune Survey

General observations of the dune plant community were made during site visits conducted 22 February, 14 April, and 25 April 2000. The pre-abandonment dune survey was conducted on 24 April 2000. At the removal site, the width of the vegetated zone (and therefore the length of the transect) was 89.0 m, while at the upcoast and downcoast control sites, the transects were 67.8 and 123.0 m, respectively.

All plant species observed during the four visits to the area were noted. A total of 18 species of plants were found growing on the Mandalay Beach dunes in front of the Reliant Energy Mandalay

Generating Station (Table 2). Of these 18 plant species, 11 are native species, while seven others are non-native, introduced species. Of the native species, four are typical of beach dunes.

Table 2. Plant species on the Mandalay Beach dunes in front of the Reliant Energy Mandalay Generating Station, February-April, 2000.

Common name	Species name
beach evening primrose	<i>Camissonia cheiranthifolia</i> ssp. <i>suffruticosa</i>
beach morning-glory	<i>Calystegia soldanella</i>
beach sand-verbena	<i>Abronia umbellata</i>
beach-bur (silver beachweed)	<i>Ambrosia chamissonis</i>
Bermuda grass*	<i>Cynodon dactylon</i>
California sagebrush	<i>Artemisia californica</i>
coast bush lupine (or yellow bush lupine)	<i>Lupinus arboreus</i>
coastal buckwheat	<i>Eriogonum parvifolium</i>
coyote bush	<i>Baccharis pilularis</i>
European beachgrass*	<i>Ammophila arenaria</i>
Hottentot fig*	<i>Carpobrotus (Mesembryanthemum) edulis</i>
lotus	<i>Lotus salsuginosus</i>
pine-bush	<i>Ericameria pinifolia</i>
ripgut brome*	<i>Bromus diandrus</i>
salt grass	<i>Distichlis spicata</i>
sea fig*	<i>Carpobrotus (Mesembryanthemum) chilensis</i>
sea rocket*	<i>Cakile maritima</i>
yellow sweet clover*	<i>Medicago indicus</i>

* = non-native species

A total of 11 plant species were encountered during the transect survey, three of them native dune species (Table 3). Eight plant species were found along the pipeline and upcoast transects, while six species were observed along the downcoast transect. The dunes were mostly unvegetated, varying from 73% to 79% bare sand, with the pipeline transect slightly more vegetated than the control transects.

Table 3. Abundance and percent cover of plant species occurring in transects on Mandalay Beach dunes in front of the Reliant Energy Mandalay Generating Station, 24 April 2000.

Common name	Species name	Pipeline		Upcoast		Downcoast	
		abundance	% cover	abundance	% cover	abundance	% cover
beach evening primrose	<i>Camissonia cheiranthifolia</i> ssp. <i>suffruticosa</i>	3	0.3	46	6.8	0	0.0
beach morning-glory	<i>Calystegia soldanella</i>	6	0.7	7	1.0	0	0.0
beach-bur (silver beachweed)	<i>Ambrosia chamissonis</i>	18	2.0	16	2.4	21	1.7
coastal buckwheat	<i>Eriogonum parvifolium</i>	2	0.2	0	0.0	0	0.0
European beachgrass*	<i>Ammophila arenaria</i>	170	19.1	8	1.2	95	7.7
Hottentot fig*	<i>Carpobrotus (Mesembryanthemum) edulis</i>	0	0.0	0	0.0	72	5.9
lotus	<i>Lotus salsuginosus</i>	1	0.1	19	2.8	0	0.0
salt grass	<i>Distichlis spicata</i>	0	0.0	14	2.1	0	0.0
sea fig*	<i>Carpobrotus (Mesembryanthemum) chilensis</i>	9	1.0	32	4.7	47	3.8
sea rocket*	<i>Cakile maritima</i>	28	3.1	12	1.8	26	2.1
yellow sweet clover*	<i>Medicago indicus</i>	0	0.0	0	0.0	1	0.1

* = non-native species

European beachgrass (*Ammophila arenaria*) dominated the vegetation of the pipeline transect, covering for 19% of the transect, and comprising 72% of the vegetated cover (Table 3). Sea rocket (*Cakile maritime*) and beach-bur (*Ambrosia chamissonis*) covered 3% and 2% of the pipeline transect, respectively, while the other five species each covered 1% or less of the transect.

At the upcoast control, all plant species encountered covered 1% or more of the transect (Table 3). Beach evening primrose (*Camissonia cheiranthifolia* ssp. *suffruticosa*) covered approximately 7% of the transect, followed by sea fig (*Carpobrotus [Mesembryanthemum] chilensis*), with about 5% cover; lotus (*Lotus salsuginosus*), with 3% cover; beach-bur, salt grass (*Distichlis spicata*), and sea rocket with about 2% cover each; and European beachgrass and beach morning-glory (*Calystegia soldanella*) with about 1% cover each.

At the downcoast control, European beachgrass was again the most abundant species, but covered less than 8% of the transect (Table 3). Hottentot fig (*Carpobrotus [Mesembryanthemum] edulis*) and sea fig, both commonly known as ice plant, together covered 9.7% (5.9% and 3.8%, respectively) of the downcoast control transect. Sea rocket and beach-bur each accounted for approximately 2% cover.

Following the transect survey, seeds were collected from some native dune plants for replanting once pipeline removal activities are complete. Seeds from beach-bur, coastal buckwheat (*Eriogonum parvifolium*) and sand verbena (*Abronia maritima*) were collected and stored for later planting.

The fauna of the dune community was sparse, with few animals observed in total. During the transect survey, two insects were observed, an unidentified beetle, and an unidentified dragonfly. Neither species was members of the typical dune insect fauna. During other aspects of the dune studies, domestic honeybees (*Apis mellifera*), one desert cottontail (*Sylvilagus auduboni*), and several unidentified lizards were observed.

Avifauna Survey

Avifauna surveys were conducted on 14, 24, and 25 April 2000. Approximately 20 sanderlings, (*Calidris alba*) and five semipalmated plovers (*Charadrius semipalmatus*) were noted on 14 April 2000. A greater representation of bird species was observed on the morning of 24 April 2000. Among the shorebirds, six willets (*Catoptrophorus semipalmatus*), five whimbrels (*Numenius phaeopus*), two American avocets (*Recurvirostra americana*), and two marbled godwits (*Limosa fedoa*) were noted, foraging primarily near the discharge channel. Additionally, an American crow was foraging among the rocks lining the channel. A ring-billed gull (*Larus delawarensis*), a juvenile California gull (*Larus californicus*), and a western gull (*Larus occidentalis*) were observed resting on the beach. One California brown pelican (*Pelecanus occidentalis californicus*) and at least seven Forster's terns (*Sterna forsteri*), including one still in its winter plumage, were seen flying above and diving into the water. During the intertidal survey conducted on 24 April 2000, three willets were observed on the beach; five California brown pelicans, one Caspian tern (*Sterna caspia*), and two unidentified gulls were observed flying. On 25 April 2000, fewer shorebirds were observed, consisting of two willets, two marbled godwits, and one killdeer (*Charadrius vociferus*). During the intertidal survey, one California brown pelican and approximately 20 western grebes (*Aechmophorus occidentalis*) were noted offshore.

In conjunction with the intertidal survey, three willets, five California brown pelicans, one Caspian tern, and two unidentified gulls were observed during sampling on 24 April. One California brown pelican and 20 western grebes were observed in the study area during sampling on 25 April.

Intertidal Survey

Intertidal samples for the pre-abandonment survey were collected on 24 and 25 April 2000. On 24 April, the +3 and +5 ft MLLW elevations were sampled at the pipeline site and downcoast control site.

Sampling occurred between 1220 and 1330 hr. On that day, the tide rose from a low of +0.6 ft MLLW at 0847 hr to a high of +2.9 ft MLLW at 1645 hr. On 25 April, the -1 ft and +1 ft MLLW elevations were sampled at the pipeline site and downcoast control site, and the +1 ft, +3 ft, and +5 ft MLLW elevations were sampled at the upcoast control site. Sampling on 25 April was conducted between 0900 and 1115 hr. On that day, the tide fell from a high of +4.0 ft at 0131 hr to a low of +0.7 ft at 1006 hr, then rose to a high of +3.2 ft at 1823 hr. Dangerous surf conditions precluded sampling the -1 ft elevation at the upcoast control site.

Sediments at all stations ranged from sand to cobble. As such, penetration of the intertidal corers ranged from 25 to 35 cm. The upcoast control site was 75 m downcoast from the discharge canal, and waters at that station were considerably warmer than waters at the other two stations. No California grunion eggs were observed during sampling.

Species Composition and Abundance. Only 12 individuals representing two species were collected on the 6-mm screen during the intertidal survey (Tables 4 and 5). Nine sand crabs (*Emerita analoga*) and three annelids (*Hemipodus borealis*) were collected in the 55 core samples. Sand crabs were most abundant at the -1 ft MLLW elevation, and were also most abundant at the pipeline station with a total of five individuals. A gravid female was collected at the -1 ft level at the pipeline station. *H. borealis* was collected at the downcoast control site (two individuals) and at the pipeline site (one individual).

Table 4. Summary of community parameters for intertidal macroinfauna at Reliant Energy Mandalay Generating Station, April 2000.

Parameter	Level (ft MLLW)				Total
	-1	+1	+3	+5	
Number of species					
Downcoast Control	2	1	-	-	2
Pipeline	1	1	1	1	2
Upcoast Control	N.S.	1	1	-	1
Total individuals					
Downcoast Control	3	1	-	-	4
Pipeline	3	1	1	1	6
Upcoast Control	N.S.	1	1	-	2
N.S. = Not sampled					

Density. Density of animals among elevation levels ranged from 0.2 individuals per m² at the +5 ft MLLW level to 1.9 individuals per m² at the -1 ft MLLW level (Table 5). Density of sand crab ranged from 0 individuals at the +5 ft level to 1.6 individuals per m² at the -1 ft level. Density of *Hemipodus borealis* ranged from 0 individuals at the +3 ft level to 0.3 individuals per m² at the -1 ft level.

Subtidal Survey Results

The subtidal survey was conducted at 17 stations on 24 and 25 April 2000 (Figure 5). Sea conditions ranged from 3 to 6 ft swells and from flat to choppy water. Sampling occurred between 1200 and 1530 hr. On that day, the tide rose from a low of +0.6 ft MLLW at 0847 hr to a high of +2.9 ft MLLW at 1645 hr. On 25 April, the pipeline and anchor sites were sampled between 1100 and 1400 hours. On that day, the tide fell from a high of +4.0 ft at 0131 hr to a low of +0.7 ft at 1006 hr, then rose to a high of +3.2 ft at 1823 hours. Underwater visibility ranged from 0 to 0.1 meter. Dangerous surf conditions precluded sampling in waters shallower than -25 ft MLLW. The shallowest dive was conducted on the seaward edge of a rip current.

Table 5. Abundance and density of intertidal macroinfauna species at Reliant Energy Mandalay Generating Station, April 2000.

Species	Downcoast Control				Pipeline				Upcoast Control			Total
	-1	+1	+3	+5	-1	+1	+3	+5	+1	+3	+5	
Abundance												
<i>Emerita analoga</i>	2	-	-	-	3*	1	1	-	1	1	-	9
<i>Hemipodus borealis</i>	1	1	-	-	-	-	-	1	-	-	-	3
Density (No./m²)												
<i>Emerita analoga</i>	12.7	-	-	-	19.1	6.4	6.4	-	6.4	6.4	-	5.2
<i>Hemipodus borealis</i>	6.4	6.4	-	-	-	-	-	6.4	-	-	-	1.7
*Does not include one <i>E. analoga</i> that went through the mesh screen.												

*Does not include one *E. analoga* that went through the mesh screen.

No kelps, eelgrass or hard substrate (suggesting reefs) were noted on any of the dives on the pipeline on at the various anchor areas. Substrate type ranged from hard packed sand to soft clays, with several sites having a mixture of both types of substrates. The only faunal species encountered were large polychaete worms (*Diopatra splendissima*), sand dollars (*Dendraster excentricus*), moon snails (*Neverita reclusiana*), and large hermit crabs (*Isocheles pilosus*). Several areas had extensive and dense sand dollar beds.

Pipeline Substrate (and biota) Characteristics. Station Terminus (44.3ft MLLW) 1460 m from the onshore connection - The area of the terminus pipeline had a substrate of soft sediment. No large biota were noted in the 80 m² search area.

Station 0.05 nm Along Pipeline (42.2 ft MLLW) 1370 m from the onshore connection - This area of the pipeline had a substrate of soft sediment. No large biota were noted in the 80 m² search area.

Station 0.10 nm Along Pipeline (41.2 ft MLLW) 1280 m from the onshore connection - This area of the pipeline had a substrate of soft sediment. No large biota were noted in the 80 m² search area.

Station 0.15 nm Along Pipeline (39.2 ft MLLW) 1190 m from the onshore connection - This area of the pipeline had a substrate of soft sediment. No large biota were noted in the 80 m² search area.

Station 0.20 nm Along Pipeline (38.2 ft MLLW) 1100 m from the onshore connection - This area of the pipeline had a substrate of hard packed sand. A few polychaetes (*Diopatra splendissima*) were noted within the 80 m² search area.

Station 0.25 nm Along Pipeline (36.9 ft MLLW) 1010 m from the onshore connection - This area of the pipeline had a substrate of hard packed sand. A sparse sand dollar (*Dendraster excentricus*) community (< 50 m²) and a few polychaetes (*Diopatra splendissima*) were noted within the 80 m² search area.

Station 0.30 nm Along Pipeline (34.9 ft MLLW) 920 m from the onshore connection - This area of the pipeline had a substrate of mixed hard packed sand and soft sediment. A sparse sand dollar (*Dendraster excentricus*) community (< 50 m²) and a few polychaetes (*Diopatra splendissima*) were noted within the 80 m² search area.

Station 0.35 nm Along Pipeline (33.0 ft MLLW) 830 m from the onshore connection - This area of the pipeline had a substrate of hard packed sand with patches of soft sediment. No large biota were noted in the 80 m² search area.

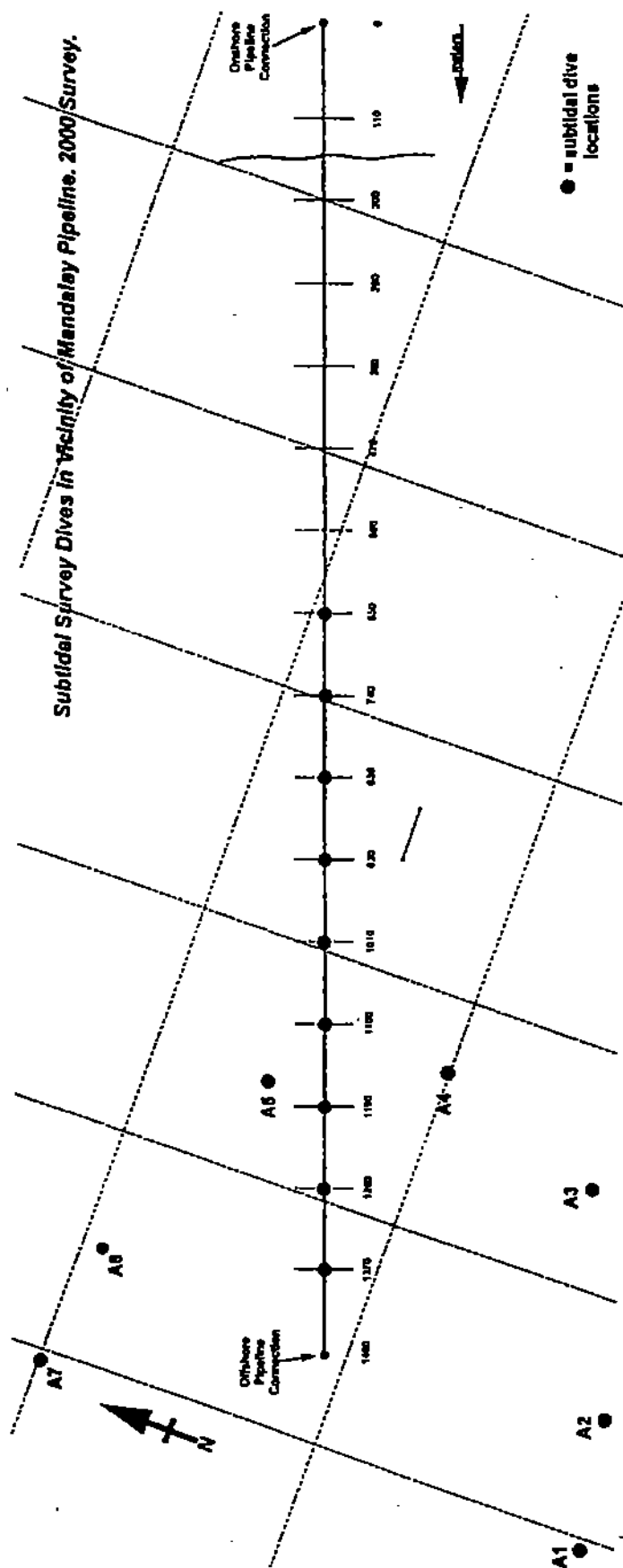


Figure 5. Location of subtidal survey dive locations.

Station 0.40 nm Along Pipeline (30.0 ft MLLW) 740 m from the onshore connection - This area of the pipeline had a substrate of hard packed sand and soft sediment. Many polychaetes (*Diopatra splendidissima* and *Pista elongata*) were noted as well as a densely packed sand dollar bed (> 100 m²) within the 80 m² search area.

Station 0.45 nm Along Pipeline (27.1 ft MLLW) 650 m from the onshore connection - This area of the pipeline had substrate of hard packed sand. A densely packed sand dollar bed (> 100 m²) was noted within the 80 m² search area.

Anchor Block Substrate (and biota) Characteristics. Anchor Block Number 1 (48.1 ft MLLW) - This area had a substrate of soft sediment. A few polychaetes (*Diopatra splendidissima*) were noted within the 80 m² search area.

Anchor Block Number 2 (45.7 ft MLLW) - This area had a substrate of soft sediment. A few polychaetes (*Diopatra splendidissima*) were noted within the 80 m² search area.

Anchor Block Number 3 (43.6 ft MLLW) - This area had a substrate of very soft sediment. No biota were noted within the 80 m² search area.

Anchor Block Number 4 (40.5 ft MLLW) - This area had a substrate of mixed hard and soft sediments. Many polychaetes (*Diopatra splendidissima*) and a densely packed sand dollar bed (> 100 m²) were noted within the 80 m² search area.

Anchor Block Number 5 (42.4 ft MLLW) - This area had a substrate of very soft sediments. No biota were noted within the 80 m² search area.

Anchor Block Number 6 (43.3 ft MLLW) - This area had a substrate of very hard packed sediment. No biota were noted within the 80 m² search area.

Anchor Block Number 7 (44.2 ft MLLW) - This area had a substrate of very hard packed sediment. Polychaete worms (*Diopatra splendidissima*), moon snails (*Neverita reclusiana*), and large hermit crabs (*Isocheles pilosus*) in relatively low abundance were found in the 80 m² search area.

In general, sediments were a mixture of soft and hard packed sand and large slowly-moving or non-motile biota were relatively sparse. There was no hard rocky substrate noted along the pipeline or in any of the anchor locations, nor was any biota noted that would suggest hard substrate was in the vicinity of any of the subtidal stations.

DISCUSSION

Dune Survey

The results of the dune survey indicate that a superficially healthy appearing dune community thrives in the location of the pipeline corridor. However, of the 18 plant species noted, seven are non-native, introduced species, and, of the 11 native species, only four are typical of beach dunes.

This healthy appearing community does not contribute significantly to the well being of the faunal community. Many of the non-native species and the non-dune species effectively outcompete native dune plants. As a result, the faunal community of the dunes is not as robust as a native dune community. Faunal species included only two insects, neither of which are members of the typical dune insect fauna. During other aspects of the dune studies, only domestic honeybees (*Apis mellifera*), one desert cottontail (*Sylvilagus auduboni*), and several unidentified lizards were observed.

Avifauna Survey

General observations indicated that bird activity was low and that there was no evidence of nesting. The presence of joggers and several unleashed dogs may have limited bird activity on these survey dates. McCrary and Pierson (1999) suggest that inaccessibility of beaches to human use may be an important aspect of shorebird habitat quality. Human disturbance could also preclude successful nesting attempts by ground-nesters, such as the western snowy plover (*Charadrius alexandrinus nivosus*), the California least tern (*Sterna antillarum browni*), and the elegant tern (*Sterna elegans*).

The Pacific Coast breeding population of the western snowy plover is threatened throughout its range by loss and disturbance of nesting sites (USFWS 1973). Poor reproductive success, resulting from human disturbance, predation, and inclement weather, combined with permanent or long-term loss of nesting habitat and encroachment of introduced European beachgrass and urban development, has led to a decline in active nesting colonies, as well as an overall decline in breeding and wintering population of the western snowy plover.

Although no western snowy plovers were observed during the survey, the dune-backed beach in front of the Mandalay generating station is within an area recently designed as critical habitat for this Federally listed threatened species (site number CA-15, Unit 2; USFWS 1999). The Pacific Coast population of western snowy plovers includes both resident and migratory birds. They breed primarily on coastal beaches from southern Washington to southern Baja California, Mexico (USFWS 1973). Sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries are the preferred habitats for nesting. Twenty of the 28 known breeding sites in the United States occur in California, with larger concentrations of breeding birds occurring to the south. Snowy plovers nest in loose colonies and nest sites typically occur in flat, open areas with sandy or saline substrates and sparse vegetation. The breeding season extends from March through September, while the wintering season is generally from October to February, with some overlap occurring between the seasons. The critical habitat that includes the beach in front of the Mandalay generating station was designated because of historical use of the area for both nesting and wintering by snowy plovers.

California least terns, State and Federally listed as endangered, are present in California only during the nesting season, from April to September (Thelander and Crabtree 1994). They are plunge feeders that locate their breeding colonies near shallow areas with high abundances of small fish to feed their young, such as estuaries, river mouths, and shallows. Breeding colonies are found from the San Francisco Bay area south to Baja California, Mexico. The largest United States colonies are located in Los Angeles, Orange and San Diego counties. Several nesting colonies are known in Ventura County, including one at the Santa Clara River mouth upcoast of the Mandalay generating station (Ron Jurek, CDF&G, pers. comm.). Tern colonies require extensive areas of shoreline. Loss and degradation of coastal habitat for nesting and foraging account for the species decline, and the least terns continue to be vulnerable to human disturbance and predation. California least terns are unlikely to nest on the beach in front of the Mandalay generating station for these reasons (although the area was probably part of the historic breeding area) but adult birds may use the shallow waters offshore of the beach for foraging. Scheduling projects to occur during the winter, when all members of the species have migrated to their wintering area, can minimize impact on this species.

The elegant tern, a California species of special concern, has similar life history and habitat preference as the California least tern and is therefore subject to the same pressures. These larger terns share colonies with California least terns, but unlike the least terns may winter in the area. Winter foraging is likely to occur farther offshore than during the summer, when the adults seek small fish to feed their young. Impact on the elegant tern from nearshore and beach modification is likely to be minimal if conducted in the winter. Other sensitive bird species, such as the California brown pelican (Federal and state endangered) and the California gull (state species of concern), are likely to be in the area year round, but impact from the proposed project will be minimal on these species.

Intertidal Survey

Only two species were collected during the pre-abandonment intertidal surveys; the sand crab *Emerita analoga* and the annelid *Hemipodus borealis*. Sand crab was the dominant organism, representing 75% of total abundance (9 of 12 organisms).

Emerita analoga adults live in the surf zone on exposed sandy beaches along the temperate west coast of the Americas. There is also a small population in the head of the Gulf of California. Adults live in, or just below, the surf zone where they feed by filtering the water from receding waves with their antennae (Efford 1966). Sand crabs were the most abundant animal sampled during the 1972-1973 Thermal Effect Study at Mandalay Generating Station (EQA/MBC 1973).

The glycerid *Hemipodus borealis* is found intertidally between San Diego, California and British Columbia, Canada (Hartmann 1968). A similar species, *H. californiensis*, was the most abundant and commonly occurring annelid collected during the 1972-1973 Thermal Effect Study at Mandalay Generating Station (EQA/MBC 1973).

Sediments at the +3 and +5 ft levels at all stations were characterized by medium to coarse sand overlying subsurface gravel and rocks. At the lower elevations, surface sediments were coarser. The two species collected are adapted to life in the surf zone and in coarse sediments.

On 25 July 1990, CDF&G conducted a survey for Pismo clams at three locations along the Ventura County coastline. One mile southeast of the Mandalay facility, CDF&G biologists found abundances averaging 13 clams/m² and ranging from 4 to 32/m². The mean shell length was 52 mm (2 in) and most of the clams were only two to three years old, indicating that 1987 and 1988 were good recruitment years. Few newly recruited (1990) clams were found (Togstad and Haaker 1990).

Bean clams live close to the sediment surface and require good aeration. CDF&G biologists also found bean clams during the Pismo clam survey, but they were not as abundant as the Pismo clams (David O. Parker, CDF&G, pers. comm.).

Sand crabs are found in the middle intertidal zone and also require good aeration. During a cursory examination on 16 August 1990, MBC scientists found sand crabs on the beach in the vicinity of the Mandalay generating station. There appeared to be two age cohorts: larger crabs in the size range 25 to 30 mm (carapace length), at a density of 2 to 3/m², and smaller crabs less than 20 mm, at a density of about 25/m².

During intertidal studies at the Mandalay Generating Station in 1971, MBC biologists found sand crabs at an average density of 19/m² (IRC and MBC 1972a). In other intertidal studies conducted at Ormond Beach, south of Mandalay Beach, investigators in 1972 found sand crabs at densities of 7/m², bean clams at densities of 6/m², and Pismo clams at 4.5/m² (IRC and MBC 1972b). Another intertidal study in 1974 at Ormond Beach found sand crabs in abundances of 4/m² and bean clams, which were patchy in distribution and occurred at only two of the five study sites, were found in numbers of 42/m² (MBC 1974). A study in 1975 at Ormond Beach found sand crabs in concentrations of 16/m², bean clams at 2.5/m² and Pismo clams at 1/m² (MBC 1975). Sand crabs are extremely mobile, rapid burrowers, and may quickly recolonize a disturbed area of beach.

Subtidal Survey

Subtidal dives conducted over two days concluded that substrate in the offshore area off of Mandalay generating station was a mixture of hard and soft packed sediments. There was no evidence of hard substrate noted during any of the surveys at 17 dive stations. There were no large kelps or other sensitive biota noted during the surveys. This is consistent with observations noted on trawl surveys of

the generating station during the past 28 years for both the thermal effects study conducted in 1972 (EQA-MBC 1973) and the almost yearly NPDES studies of 1978 to 1999 (MBC 1978-1990, Ogden 1991-1993, MBC 1994-1999). There has been no evidence of hard bottom such as snags or lost gear during any of these trawl surveys. No hard substrate has been noted in the sample logs during numerous benthic dives during this same period. Biota encountered, large polychaetes, sand dollars, moon snails, and large hermit crabs are a small subset of the biota noted during these studies, but are consistent with findings of both the thermal effects study and latter studies. Sediment characteristics described during this survey are consistent with numerous sediment studies conducted during both the thermal effects studies 1972 (EQA-MBC 1973) and NPDES studies in the past 28 years (MBC 1978-1990, Ogden 1991-1993, MBC 1994-1999). Although it was not possible to survey the area from approximately 25 ft MLLW through the surfline at this time (due to the dangerously high surf) to the low sublittoral zone, past surveys have noted only gravel out to -5 ft MLLW and hard packed sand beyond (EQA-MBC 1973). This type of substrate is indicative of a high energy surf zone with constant turnover of the sediment, a very poor substrate in terms of community stability.

The pipeline runs from the station to a water depth of about 44 ft, a distance of about 1,640 m. Benthic infauna studies in the area immediately offshore from the Unocal Mandalay facility indicate that at depths of approximately 20 ft, the number of organisms in the sediments is extremely variable, especially seasonally. In 1986, the mean abundance ranged from 3 individuals/0.01 m² in the winter to 31/0.01 m² in the summer, and in 1988, from 5 individuals/0.01 m² in the winter to 52/0.01 m² in the summer. The number of species also varied by season. In 1986, number of species increased from 2 in winter to 14 in summer, while in 1988, it increased from 4 in winter to 17 in summer (MBC Mandalay 1986, 1988).

Biomass of infaunal organisms ranged from 85 g/m² in winter to 444 g/m² in summer in 1988. Station values varied from 8 g/m² to 1016 g/m², due to the patchy distribution of Pacific sand dollars (*Dendraster excentricus*) (MBC 1988). Since the offshore slope in the Mandalay area has a gentle gradient, it would be expected that the sublittoral infaunal community would be similar over short distances.

Data from otter trawls along the 20-ft and 40-ft isobaths in the study area indicate that there are at least 24 species of fish and 18 species of macroinvertebrates in the area. The most abundant species of fish in surveys conducted from 1978 to 1988 were white croaker (*Genyonemus lineatus*), queenfish (*Seriphus politus*) and barred surfperch (*Amphistichus argenteus*). The most common invertebrate species were Pacific sand dollar (*Dendraster excentricus*) and spotted bay shrimp (*Crangon nigromaculata*). As with the infauna, numbers of individuals and species were greater in summer than in winter (MBC 1988).

Pacific sand dollar beds have been extensive in the Mandalay Beach offshore areas over the almost 30 years of monitoring. Sand dollars typically occur in dense aggregations, just seaward of the breaker line to depths of 12 m (Chia 1969, Merrill and Hobson 1970). They orient themselves semivertically in the sediment, only partially buried, and feed on suspended material swept by on currents. During calm conditions, they move shoreward into shallower water. When conditions are rough, they move into deeper water. Winter storms are occasionally severe enough to disrupt the sand dollar bed structure, after which the site is recolonized by juveniles recruited from other locations. Recolonization of disrupted beds can be quite fast as noted in 1997. Winter storms of 1997 were severe and disrupted the sand dollar beds. By the August NPDES sampling period, however, the nearshore area had been newly recolonized by small sand dollars. When conditions are favorable, they can colonize an area extremely rapidly. Long-term surveys of the epifauna offshore of Huntington Beach indicated populations were ephemeral in some locations and persistent in others. In one study location offshore of Huntington Beach, surveys conducted for years noted the absence of sand dollars since 1991, but in 1997 adult sand dollars were abundant at several locations (MBC HBGS 1997).

ENVIRONMENTAL ASSESSMENT

Based on the pre-abandonment results, as presented herein, it appears there will be minimal to major disturbances of the various communities in association with the Mandalay pipeline abandonment.

Dune Community

The dune community appears to be the most delicate community and would probably be severely disrupted, but for a relatively short period if appropriate measures are taken. There are no endangered plants or animals in the community and there are several invasive species that could be removed during the process of the abandonment activities.

Potential Impacts. The use of excavation equipment and vehicle and foot traffic on the beach and dunes could have considerable impact on the dune plants and stability of the dunes. Excavation and temporary deposition of excavated material will eliminate species from the disturbed areas and vehicle traffic will do additional damage. Although beach contours will be restored to the present topography, it is uncertain how quickly these two species would re-establish in the disturbed area once construction has been completed and the beach restored.

During the excavation period, public use of the beach will be interrupted briefly.

Avifauna Community

Based on the avifauna survey, it is unlikely that the project would have a major impact on the roosting, nesting, or foraging activities of any endangered or migratory species. The beach area is already widely used by the public which precludes nesting of several endangered or species of special concern.

Potential Impacts. Short term disruptions in use of the beach by gulls, terns, sanderlings, etc., for foraging and roosting during actual excavation activities. No least terns, snowy plovers, or brown pelicans are expected to be impacted during the excavation activities.

Intertidal Community

Intertidal studies noted an impoverished community of only a few sand crabs and large polychaete worms. There were no large or small clams such as Pismos and bean clams that would be affected by any of the abandonment plans, however, they have been noted in the vicinity in past surveys. Based on the large berms cut by the high energy waves in the beach sands, it is unlikely that any disturbance would have a lasting effect on the biota in the intertidal zone near the pipeline corridor.

Potential Impacts. The intertidal zone is subject to variable wave action, to water depths of about 7 ft below the high tide mark. Other studies have found up to 25 sand crabs/m² in the upper intertidal zone and as many as 42 bean clams/m² and 13 Pismo clams/m² in the lower intertidal zone. The excavation of the pipe could potentially disturb sand crabs, bean and Pismo clams. Most sand crabs will probably reburrow immediately when dislodged. However, if covered by too much sand, they may not be able to dig to the sediment surface and would soon suffocate. The bean and Pismo clams also require good aeration, but are not capable of burrowing as rapidly. Therefore, unless the clams are collected and carefully replaced at a suitable depth in stable sand, they would probably not survive the excavation.

Repopulation of the disturbed zone by sand crabs will be rapid, but may require a much longer time for the two clam species. Pismos, especially, will probably not recruit as adults from the surrounding undisturbed zones, but will depend on good recruitment of juveniles during the next reproductive cycle. Transplanting of disturbed Pismo clams is not particularly effective, and the longer the clams are

removed from the substrate, the greater the mortality (Togstad 1989). Smaller species of intertidal fauna are mostly short-lived and reproduce annually. It is expected that they will repopulate the disturbed area within a year.

Subtidal Community

Subtidal studies suggest that there is no hard substrate or sensitive resources offshore of Mandalay along the pipeline corridor or in any of the potential anchor areas. Long-term studies offshore of Mandalay suggest there is no hard substrate anywhere in the vicinity of the power plant. Therefore, only impacts to the soft bottom community would be expected if the pipeline was removed.

Potential Impacts. The magnitude of the disruption would be small in areal extent (limited to a narrow zone around the pipeline), but would be large in severity (organisms would be separated from their sediment substrate for a long period of time). During the excavation procedure, organisms would be suspended in the water column, exposing them to predation by fish and macroinvertebrates. It is assumed that there would be a large mortality of organisms suspended during the excavation procedure. Many soft bottom organisms, however, are mobile and would be able to readjust position from such a disruption. Other species such as fish or other motile invertebrates would depart the area during disturbances.

In addition to the direct effects of disturbance by excavation, there would be a zone of sediment redeposition beyond the sides of the trench, which would smother any organisms which were not able to move rapidly enough to the sediment surface to maintain their suitable orientation and depth. The extent of mortality would depend on the volume of material removed, and the local current velocity and direction during the procedure. Therefore, there would be an area of unknown extent with additional mortality of infauna.

Marine Mammals

Marine mammals are fully protected under the Marine Mammal Protection Act, and many mammals are listed as threatened or endangered species and are protected by the Endangered Species Act. There are approximately 30 species of marine mammals recorded in California waters that could occur in the Ventura area. Marine mammals that could potentially occur within the specified project area (nearshore areas off the Reliant Energy Mandalay Generating Station) are discussed in the following paragraphs.

Pinnipeds

Four species of pinnipeds breed in substantial numbers and share beach space at many sites on the southern California Channel Islands: California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina*), northern fur seal (*Callorhinus ursinus*), and northern elephant seal (*Mirounga angustirostris*) (Stewart and Yochem 1999). Two of these species, California sea lion and Pacific harbor seal, have been observed in the project area.

California sea lions inhabit the entire western coast of North America, and are abundant in the Southern California Bight during breeding season (May through July). The Channel Islands represent important breeding habitat for the California sea lion. Sea lions feed on squid, octopus, and a variety of fishes. Biologists have observed California sea lions offshore the Reliant Energy Mandalay Generating Station in seven of the ten NPDES survey years since 1990 (MBC 1990; 1994-1999; Ogden 1991-1993).

Pacific harbor seal occurs from Baja California to Alaska, but only 14% of the population is found south of Alaska. In the Southern California Bight, Pacific harbor seals are most abundant during the peak haul-out period (May through July) on the Channel Islands, but are encountered year-round. Besides the Channel Islands and the Coronados Islands in Mexico, these animals haul out on intertidal sand bars,

rocky shores, and beaches. Pacific harbor seals frequently forage close to shore, and feed on bivalves, crabs, squid, octopus, and a variety of fish. Biologists have observed Pacific harbor seals in two of the ten NPDES surveys since 1990 offshore the Reliant Energy Mandalay Generating Station (MBC 1990; 1994-1999; Ogden 1991-1993).

Cetaceans

There are 27 cetaceans that occur in the Santa Barbara Channel and to the north to Point Arguello (Dames and Moore 1983). Those that frequent nearshore areas include common dolphin (*Delphinus delphis*), coastal bottlenose dolphin (*Tursiops truncatus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Dall's porpoise (*Phocoenoides dalli*), Minke whale (*Balaenoptera acutorostrata*), gray whale (*Eschrichtius robustus*), and Pacific pilot whale (*Globicephala macrorhynchus*). Of these species, dolphins and gray whale are most likely to occur in or near the shallower nearshore waters of the specified project area. Pacific white-sided dolphins are common throughout the northern Pacific Ocean and along the California coast. While Pacific white-sided dolphin could potentially occur in the project area, common dolphin and coastal bottlenose dolphin have been observed in past surveys in the project area, and are likely to occur in the vicinity of the project site. Gray whales pass by the project area on their north and south migrations between Mexico and Alaska.

Common dolphins are found throughout the world (except polar regions). One of the most familiar small dolphins, it is sometimes seen together with other dolphin species in herds of hundreds or thousands. Common dolphins have been observed in two of the ten NPDES survey years since 1990 off the Reliant Energy Ormond Beach Generating Station (MBC 1990; 1994-1999; Ogden 1991-1993) and off the Reliant Energy Mandalay Generating Station in 1997 (MBC 1997). Unidentified dolphins were observed off Ormond Beach in 1995 (MBC 1995).

Coastal bottlenose dolphins occur world-wide, and California contains coastal and offshore populations that the National Marine Fisheries Service is managing as separate stocks. The coastal population is found within 1 km of shore and is distributed from Point Conception through Ensenada, Mexico. Two coastal bottlenose dolphins were observed off the Reliant Energy Mandalay Generating Station in 1990 (MBC 1990).

Gray whales (*Eschrichtius robustus*) pass by the project area during their northbound (spring) and southbound (fall) migrations between Mexico and Alaska, though the majority follow an offshore route instead of an inshore route in the Southern California Bight. Gray whales use their baleen to sift out mollusks, crustaceans, and other invertebrates from bottom sediments. Since 1994, this species is no longer listed as endangered or threatened under the federal Endangered Species Act. One gray whale was observed offshore the Reliant Energy Ormond Beach Generating Station in April 1994 (MBC 1994).

Potential Impacts. Dolphins, seals, and sea lions probably utilize the project area for foraging opportunities. Gray whales transit past the project site during their spring and fall migrations between Mexico and Alaska. Pipeline removal activities are not expected to disrupt habitat of any of these mammals, though human disruptions could force these animals to forage elsewhere. These potential effects are temporary in nature, however, and the project area is surrounded by suitable foraging habitat.

Removal operations are not expected to significantly disrupt gray whale migrations. Gray whales could venture near or into the project area during northbound or southbound migrations (primarily January through March). Increased boat/barge presence offshore of the generating station could potentially divert whales on a shallow, inshore track further offshore and away from the project site.

CONCLUSION

In conclusion, it would appear that the effects of the pipeline abandonment project, although disruptive to the communities, would be mostly short term and transitory.

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